

ABSTRACT OF THE DISCLOSURE

A magnetoresistive element has a ferromagnetic double tunnel junction having a stacked structure of a first antiferromagnetic layer/a first ferromagnetic layer/a first dielectric layer/a second ferromagnetic layer/a second dielectric layer/a third ferromagnetic layer/a second antiferromagnetic layer. The second ferromagnetic layer that is a free layer consists of a Co-based alloy or a three-layered film of a Co-based alloy/a Ni-Fe alloy/a Co-based alloy. A tunnel current is flowed between the first ferromagnetic layer and the third ferromagnetic layer.